

## FORMS OF OPHIOGLOSSUM VULGATUM IN EASTERN NORTH AMERICA.

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SEVERAL years ago during a month's collecting in southern New Hampshire I discovered a rather large colony of *Ophioglossum vulgatum*, from which when the spikes became ripe over four hundred specimens were collected. The plants, which grew in two adjacent bits of sphagnous meadowland, usually in the open but occasionally on the edges of thickets, show great variation in size, shape, and position of leaf, size of spike, and number of fronds, sufficient to constitute half a dozen "species" if brought back by collectors from as many regions. Usually there is but one frond on a rootstock, but not rarely two are present, either both fertile or one sterile, and equal or unequal in size. The presence of two fronds on a rootstock, which has been emphasized as a more or less distinctive mark of *Ophioglossum arenarium* (= *O. vulgatum* var. *minus* Moore), is shown by specimens in the Gray Herbarium to be of not infrequent occurrence practically throughout the American range of *O. vulgatum*, and is not correlated with any other characters either of size or leaf form. It apparently occurs rather more frequently in *O. Engelmanni* Prantl, but can hardly be considered of any importance in distinguishing species or varieties in this immediate group.

The ordinary leaf form in this series seems to be oblong, obtuse or rounded at tip, broadest about the middle and only slightly narrowed at the ends, with the base somewhat decurrent on the stem. An average specimen measures 5 by 1.5 cm., with extremes of 7 by 2 to 3.8 by 1 cm. The sterile segment is situated almost always at or above the middle of the hypergean axis, but occasionally at a considerable distance below it, a feature upon which stress has also been laid in descriptions of *O. arenarium*, but which frequently occurs in some individuals of a colony of otherwise normal *O. vulgatum*. This common oblong leaf grades on the one hand into a form with shorter and broader ovate leaf, more conspicuously contracted at the base, and on the other connects with a larger form having oblong or ovate-oblong sterile segment as much as 96 mm. in length. Some broader-leaved intermediates lead to plants with oval leaf more than half as



broad as long, in an extreme case 45 by 27 mm. All these forms, although dissimilar enough in their extremes, intergrade so gradually and completely that their recognition even as formae does not seem practicable, but the following plant, though it also inosculates with the other forms, is so distinct and generally recognizable as to deserve a name.

*OPHIOGLOSSUM VULGATUM* L. f. **pseudopodum**, n. forma, folio oblongo obtuso basin versus petioliforme angustato. Sterile segment oblong, obtuse, 69–122 mm. long, 9–26 mm. wide, situated at or below middle of axis, tapering into a conspicuous petiole-like base one-fourth to two-thirds the length of rest of leaf. Specimens examined: MAINE: Bridgton, Cumberland Co., Aug. 1905, *M. H. Grant*; VERMONT: Ferrisburg, 19 June 1881, *Faxon*; NEW HAMPSHIRE: sphagnous meadow, Sharon, Hillsboro Co., 2 Aug. 1909, *Blake* (TYPE SHEET no. 682 in my herb.); other specimens collected at various dates; CONNECTICUT: Manchester, 1899, *A. W. Driggs*; MICHIGAN: low dump ground, Aug. 1888, *Farwell* 584; ARIZONA: Huachuca Mts., Sept. 1882, *Lemmon*.

The following plant, lately described by Clute as a variety of *O. vulgatum*, should be reduced to formal rank as a mere ecological development, which the plant above described certainly is not. Through the kindness of Mr. W. A. Poyser, its discoverer, I possess a fertile specimen, which has a sterile segment with lamina 5 cm. long and 1.5 cm. wide on an attenuate base 12.5 cm. long.

*O. VULGATUM* f. **lanceolatum** (Clute), n. comb. *O. vulgatum* var. *lanceolatum* Clute, Fern Bull. xix. 72 (1911). Sterile segment with a very long linear base, as above described, due to growth among clumps of sedge. Specimen examined: PENNSYLVANIA: between hummocks in Pratts Swamp, Lima, Delaware Co., 3 July 1908, *W. A. Poyser*.

The plant described from New Jersey some years ago as *Ophioglossum arenarium* E. G. Britton seems, as already noted by Clute, to be merely a starved form of *O. vulgatum*, with narrowly lanceolate leaf situated below the middle of

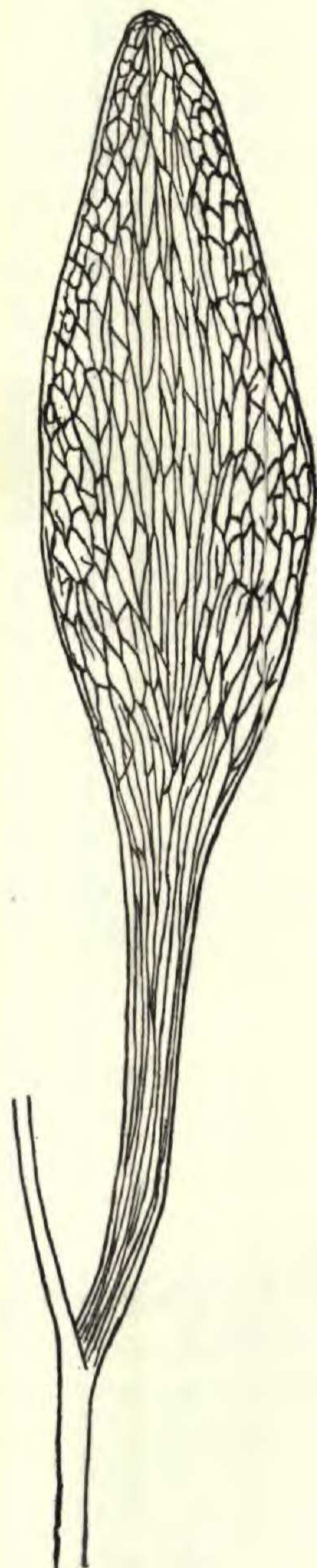


Fig. 1. *O. vulgatum* f. *pseudopodum*. Leaf from type.



the axis, and as a forma should be known as *O. vulgatum* f. *ARENARIUM* (E. G. Britton) Clute, *Our Ferns in their Haunts*, 316 (1901). *O. arenarium* E. G. Britton, *Bull. Torr. Club*, xxiv. 555, pl. (1897.) *O. vulgatum* var. *minus* Moore, *Ferns Gt. Brit. and Ireland*, t. 51B3 (1857). *O. vulgatum* var. *microstichum* Moore, *Octavo Nat. Pr. Brit. Ferns*, ii. 336 (1859). *O. microstichum* Acharius (1809), fide Moore l. c. *O. Grayi* Beck, *Bot. N. and Mid. St.* 458 (1833). It is represented from North America in the Gray Herbarium only from New York and New Jersey.

STOUGHTON, MASSACHUSETTS.

*in duplicate  
given 27 1913*

## NOTES ON THE ALGAE OF GEORGIAN BAY.

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DURING the latter part of August and the first three weeks of September, 1912, I was engaged in an investigation of the Algae of Georgian Bay, Ontario. The work was done in connection with the Biological Station, Go-Home Bay, Muskoka.

From August 17 to 19 was spent at the Station. On August 20th I started on a trip round Georgian Bay in company with Mr. A. D. Robertson in a motor-boat. We carried a tent and camp outfit, and spent from one to four days at the following points:—Waubauskene; Shawanaga, Parry Sound District; French River, Nipissing District; Killarney, Algoma District; Big Burnt Island; Wekwemikongsing Manitoulin; Rattlesnake Harbour, Fitzwilliam Island; Tobermory; MacGregor's Harbour, Bruce Peninsula; and Collingwood. From these points short runs were made each day for collecting.

It will be noticed that the number of species of Chlorophyceae reported is small; this being due to the lateness of the season as most of the Chlorophyceae are vernal plants, and even if they have not completely disappeared by midsummer they are only in a vegetative condition and not recognizable with certainty. The genera *Spirogyra*, *Zygnema*, and *Oedogonium* were present in many collections but none were in fruit.